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MEMORANDUM

DATE: 4 November 1998

TO: David Bennett, WAM, U.S. EPA, Region X

FROM: rm Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle

SUBJECT: Validation of Grainsize Data
Laboratory Batch 1001-007-05
Site Duwamish River

WORK ASSIGNMENT NO · 46-23-0JZZ

WORK ORDER NO.: 4000-019-038-5200-00

DOC. CONTROL NO.. 4000-019-038-AAAK

cc: Bruce Woods, RAP-WAM, U.S EPA, Region X
Dena Hughes, Site Manager, WESTON, Seattle
Kevin Mundell-Jackson, Database Management, WESTON, Seattle

The quality assurance review of 20 sediment samples, laboratory batch 1001-007-05, collected from the Duwamish River has been completed The sediment samples were analyzed for grainsize by Rosa Environmental using the PSEP modification to ASTM Method 422. The samples were numbered

98344015	98344019	98344023	98344027	98344031
98344016	98344020	98344024	98344028	98344032
98344017	98344021	98344025	98344029	98344033
98344018	98344022	98344026	98344030	98344034

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria described in the technical specifications of the laboratory subcontract

1. Sample Holding Times—Acceptable

   All samples were cooled with ice or refrigerated from the time of collection until analysis. A maximum holding time of six months was specified in the Duwamish River Sampling and Analysis Plan. All grainsize analyses were performed within 10 days of sample collection

2. Laboratory Triplicate Analysis—Acceptable

   Triplicate analysis was performed on sample 98334028. The laboratory triplicate percent relative standard deviation was within quality control limits of less than 25 percent for all fractions.

3 Field Duplicate Analysis—Acceptable

   Samples 98334015 and 98334016 were field duplicates. The relative percent differences (RPDs) between duplicate measurements was within quality control limits of 35 percent for all fractions

4 Sieve Sample Recovery

   Combined sieve fraction weights were within recovery limits of 80 to 120 percent compared to the initial dry sieve sample weight for all samples

5 Pipette Sample Recovery

   Sample size for pipette analysis of silt and clay fractions was within PSEP guidelines of 5 to 25 grams Sample recoveries were within QC limits of 80 to 120 percent for all samples.

6. Total Sample Recovery

   Total combined sample percent recovery (sieve and pipet) was within QC limits of 95 to 105 percent

7. Sample Analysis

   All laboratory deliverables were present and complete. No problems were noted

8. Laboratory Contact

No laboratory contact was required.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

U - The compound was analyzed for, but was not detected.

UJ - The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met

J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less than the quantitation limit or lowest calibration standard.

R - Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification

Rosa Environmental Geotechnical Laboratory, LLC

Roy F Weston, Inc
Project No · 4000-027-001-2019-38

Apparent Grain Size Distribution Summary
Percent Finer Than Indicated Size

Sample No	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (62)	31.00	15 60	7 80	3 90	2 00	1 00
98344015	100 00	100 00	99 71	97 14	93 78	86 99	80 42	74 81	64.69	50 23	34 26	18 75	9 52	9 08
98344016	100 00	100 00	100.00	96 60	94 47	91.36	89 05	84 09	73 85	56 83	37 98	26 58	15.71	11 24
98344017	100 00	100 00	99 59	95 15	92 35	89 18	86.51	81 56	69 69	50.33	31 99	19 43	12 92	9 08
98344018	100 00	100 00	99 92	98 52	94 79	85 46	78 11	73 19	67 24	44.74	23 23	15 67	11 86	7.78
98344019	100 00	100 00	98 87	98 09	95 66	87 03	76 96	70 29	61 76	44 66	32 88	16 61	11 26	7 81
98344020	100 00	100 00	100 00	98 24	95 42	90 34	85 21	79 14	66 37	47.27	29 35	18 09	12 46	8 90
98344021	100 00	100 00	100 00	97 03	94 63	91.89	90 07	85 23	70 45	48 87	29 69	17 98	11 76	8 41
98344022	100 00	100 00	99 07	97 81	96.22	93 48	86 79	78 13	71 43	57 30	37 80	24.79	17 29	11 68
98344023	100 00	95 46	94 96	93 88	92 64	89 37	81.05	72 28	65 98	51.66	30 52	20.63	14 77	9 93
98344024	100 00	99 98	99 81	98 80	96 88	89 51	69 55	59 81	54 45	32 77	21 38	15 03	10 97	7.54
98344025	100 00	99 75	98 57	96 32	92 11	83 42	71.43	62 56	56 15	19 77	12 53	9 49	7.74	6 10
98344026	100 00	100 00	99 89	97 71	93 86	86 99	76 67	67 72	54 90	19.35	12 53	9 21	7 71	6 24
98344027	100 00	100.00	99 85	98 28	97 15	95 97	94.81	91.99	87.40	62 44	34 05	24 49	18 08	12 01
98344028	100 00	100 00	99 75	98 27	96.52	90 82	85.10	78.47	71.45	55 94	37 95	25 01	16 84	11 74
98344028-2	100 00	100 00	99 89	98.17	95 94	90 72	85 05	78.51	70 49	55 45	38.32	25.16	16 82	11.39
98344028-3	100 00	100 00	99 72	98.08	96 13	90 54	84.94	78 33	73 16	56.56	40 19	25 69	17.40	12.03
98344029	100 00	100 00	99.84	98.00	95 69	91 66	87.84	79 72	68 58	54 09	37 15	23 14	15.25	8.47
98344030	100 00	100 00	99 89	98 43	96 82	94 35	91.16	84.48	73 46	57.78	39 99	25 51	16.70	12.13
98344031	100 00	100.00	99 50	98 01	96.14	93 78	90 84	85 77	79.16	65 83	46.35	29 33	18 76	12 48
98344032	100 00	100 00	99 98	98 43	96 63	91.84	88 56	82 02	71.96	56.01	37 48	24 60	16 22	11 23
98344033	100 00	98 64	97 95	95 87	93 99	88.61	82.86	77.45	71 54	57.12	39 37	24 85	15 83	12.95
98344034	100 00	100 00	99 50	98 01	96 14	93 78	90 84	85 77	79.16	65.83	46 35	29.33	18 76	12 48

Notes to the Testing

1 Apparent grain size distributions according to PSEP protocols

10/26/98

1001-007